

# Reliable, Reusable Cryotank, Phase I

Completed Technology Project (2011 - 2011)



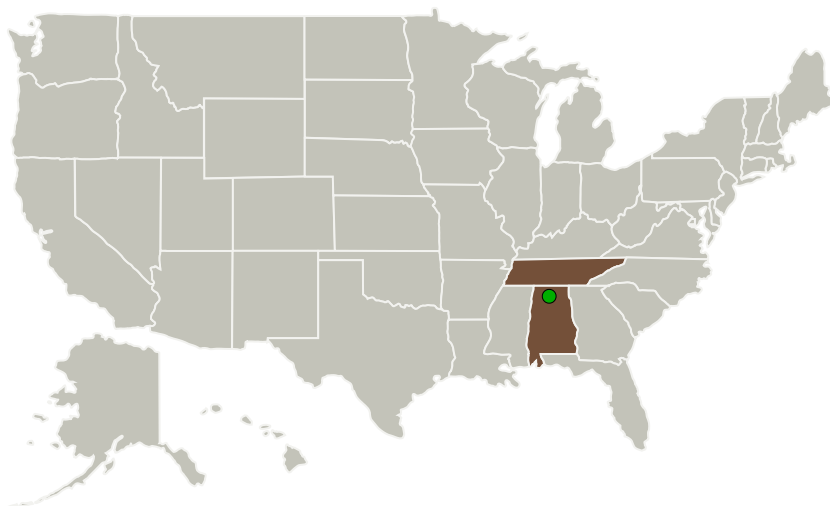
## Project Introduction

Microcracking issues have significantly limited the reusability of state-of-the-art (SOA) composite cryotanks. While developers have made some progress addressing this reusability issue, there are also significant reliability issues with the SOA cryotanks due to their inconsistent structural performance. GTL has identified the root cause of this reliability issue and proposes to confirm this diagnosis. This will be accomplished by testing two sets of laminate samples; one set fabricated with typical SOA cryotank techniques, and a second set fabricated with intentional laminate flaws. The results of this testing are expected to show a correlation between the identified flaws and the observed inconsistent performance. With this confirmation, GTL will examine several techniques that could be used to detect these flaws in production composite tanks. Additionally, GTL will show how the breakthrough BHL

TM

cryotank technology inhibits the introduction of these flaws and produced consistently high structural performance. This effort builds upon earlier research that confirmed the potential of the BHL technology to eliminate the microcracking issue. With BHL technology, it is possible to build high-performance, reusable and reliable cryotanks. At the conclusion of the Phase I effort, GTL will fabricate a subscale BHL cryotank and deliver it to NASA for independent evaluation.

## Primary U.S. Work Locations and Key Partners

Reliable, Reusable Cryotank,  
Phase I

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Organizations Performing Work	Role	Type	Location
Gloyer-Taylor Laboratories LLC	Lead Organization	Industry	Tullahoma, Tennessee
● Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Tennessee

## Project Transitions

**February 2011:** Project Start**September 2011:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/138459>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Gloyer-Taylor Laboratories LLC

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Zachary Taylor

**Co-Investigator:**

Zachary M Taylor

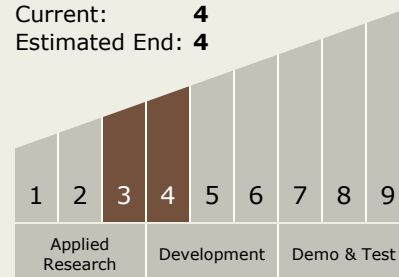
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### Technology Maturity (TRL)

Start: **3**  
Current: **4**  
Estimated End: **4**



### Technology Areas

#### Primary:

- TX01 Propulsion Systems
  - └ TX01.1 Chemical Space Propulsion
    - └ TX01.1.3 Cryogenic

### Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System